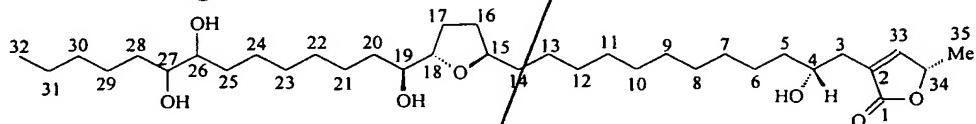


1 : What is claimed is

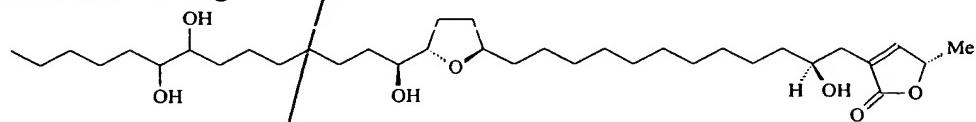
- 2 1. Annonaceous acetogenins substantially pure compounds having the structures a-g.

3 a. muricin A having formula as:



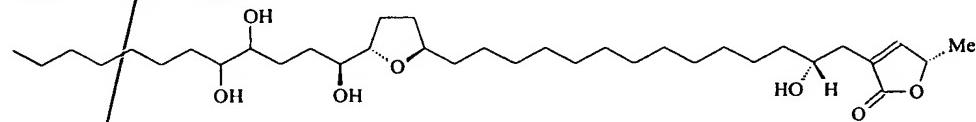
wherein the muricin A having an α , β -unsaturated γ -lactone with a hydroxyl group at C-4 position, a mono-THF ring placed between C-15 and C-18 with one flanking hydroxyl in a threo conformation, two methylene groups of the mono-THF ring corresponding to trans conformation, two hydroxyl groups at C-26 and C-27 as vicinal diol assigned as threo based, and the stereochemistry at C-34 on the γ -lactone fragment performed in (S)-configuration.

b. muricin B having formula as:



wherein the muricin B having an α , β -unsaturated γ -lactone with a hydroxyl group at C-4 position, a mono-THF ring placed between C-15 and C-18 with one flanking hydroxyl in a trans/threo conformation, two methylene groups of the mono-THF ring corresponding to trans conformation, two hydroxyl groups at C-26 and C-27 as vicinal diol assigned as threo based, and the stereochemistry at C-34 on the γ -lactone fragment performed in (S)-configuration.

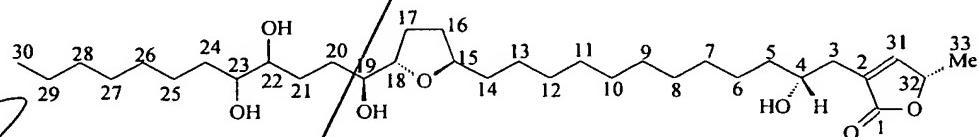
c. muricin C having formula:



wherein the muricin C having an α , β -unsaturated γ -lactone with a hydroxyl

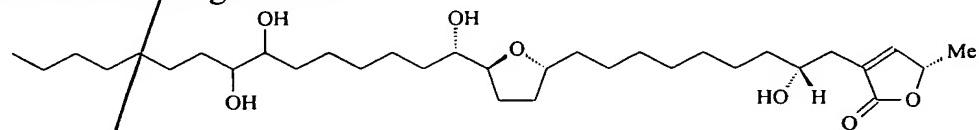
group at C-4 position, a mono-THF ring placed between C-17 and C-20 with one flanking hydroxyl in trans/threo or threo/trans conformation, two hydroxyl groups at C-24 and C-25 as vicinal diol assigned as threo based, and the stereochemistry at C-34 on the γ -lactone fragment performed in (S)-configuration.

d. muricin D having formula:



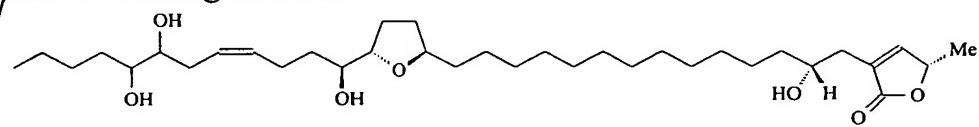
wherein the muricin D having an α, β -unsaturated γ -lactone with a hydroxyl group at C-4 position, a mono-THF ring placed between C-15 and C-18 with one flanking hydroxyl in threo/trans conformation, two hydroxyl groups at C-22 and C-23 as vicinal diol assigned as threo based.

e. muricin E having formula:



wherein the muricin E having an α, β -unsaturated γ -lactone with a hydroxyl group at C-4 position, a mono-THF ring placed between C-12 and C-15 with one flanking hydroxyl in threo/trans conformation, two hydroxyl groups at C-22 and C-23 as vicinal diol assigned as threo based.

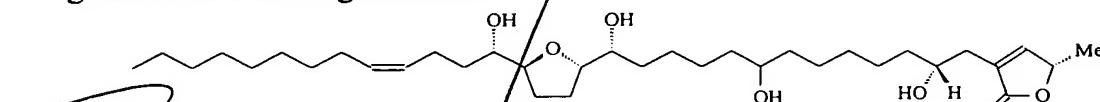
f. muricin F having formula:



wherein the muricin F having an α, β -unsaturated γ -lactone with a hydroxyl group at C-4 position, a mono-THF ring placed between C-17 and C-20 with

1 one flanking hydroxyl in threo/trans/conformation, two hydroxyl groups at C-
2 27 and C-28 as vicinal diol assigned as threo based, and a double bond
3 determined at C-24/C-25.

4 g. muricin G having formula:



5 *Claim 65*
6 wherein the muricin G having an α, β -unsaturated γ -lactone with a hydroxyl
7 group at C-4 position, a mono-THF ring placed between C-16 and C-19 with
8 one flanking hydroxyl in threo/trans/threo conformation, one hydroxyl groups
9 formed at C-10, a double bond determined at C-23/C-24, and the
10 stereochemistry at C-34 on the γ -lactone fragment performed in (S)-
11 configuration.

12 2. A method for substantially purified extract of claim 1 from the species *Annona*
13 *muricata*, wherein the method comprising:

14 extracting *Annona muricata* seeds repeatedly with MeOH at room temperature;
15 evaporating and partitioning the combined MeOH extracts to yield CHCl₃ and
16 aqueous extracts;

17 further separating the CHCl₃ layer into ten fractions by column
18 chromatography on Si gel with gradient system of *n*-hexane-CHCl₃ and
19 CHCl₃-MeOH;

20 combining the eighth and ninth fractions together and then further separating
21 into ten sub-fractions by column chromatography;

22 isolating and purifying the Annonaceous acetogenins compounds from the ten
23 sub-fractions.

24 3. The method as claimed in claim 2 for substantially purified extract of claim 1

1 from the species *Annona muricata*, in which the muricin A (1), muricin B (2), muricin C
2 (3), and muricin F (6) are isolated and purified from the seventh sub-fraction by a
3 preparative reversed-phase method.

4 4. The method as claimed in claim 2 for substantially purified extract of claim 1
5 from the species *Annona muricata*, in which the muricin D (4), muricin E (5), and
6 muricin G (7) are isolated and purified from the eighth sub-fraction by a preparative
7 reversed-phase method.

8 5. An anti-tumor composition selectively comprising an amount of substantially
9 pure muricins of claim 1, wherein the muricins are effective and acted as an anti-tumor
10 agent and selectively combined with pharmaceutically acceptable salt, ester, and carrier
11 in the anti-tumor composition.

12 6. The annonaceous acetogenins compounds as claimed in claim 1, wherein the
13 substantially pure muricins are selectively used for the preparation of a pharmaceutical
14 composition for the treatment of a patient having a tumor.

15 7. The anti-tumor composition as claimed in claim 5, wherein the anti-tumor
16 composition is used for pharmaceutically treating a patient having hepatoma cancer.

17 8. A method of treating a patient having a tumor, wherein said method comprising
18 administering an effective amount of a pharmaceutical composition comprising
19 muricins of claim 1 to a patient afflicted with cancer.

20 9. A method for treating hepatoma cancer, said method comprising administering
21 to a patient afflicted with hepatoma cancer an effective amount of a pharmaceutical
22 composition comprising a substantially pure bioactive compound selected from the
23 group consisting of muricins of claim 1 and pharmaceutically acceptable salt, ester, or
24 carrier.

add
A¹

add
B⁴